

REMARKS

Claims 1-3, 6, 15, 21, 24, 38, 43, 44 and 52-64 are pending in the above-identified application, of which, claims 59-64 are withdrawn. Claims 1-3, 6, 15, 21, 24, 38, 43, 44 and 52-58 were rejected in the outstanding office action.

With this Amendment, claims 52-53 have been cancelled. Claims 1-3, 6, 43, 44, and 54 have been amended such that they are drawn to a “dried chicory product” and methods of making and using said product, as well as to correct clerical errors. These amendments are fully supported by the application and claims as originally filed. Accordingly, no new matter has been added by way of these amendments.

Accordingly, claims 1-3, 6, 15, 21, 24, 38, 43, 44 and 54-64 are presented for further examination.

Claim objections

Claims 1, 6, and 43 were objected to because of informalities.

As suggested by the Examiner, claims 1, 6, and 43 have been amended to address the outstanding grammatical and typographical errors of record. In particular, claim 1 has been amended to replace “malodou” with “malodor,” and to add a colon after “comprising;” claim 6 has been amended to delete the “a” between “comprises” and “at;” and claim 43 has been amended to add a colon after “comprising.” Applicants thank the Examiner for these suggested amendments. In view of the amendments, Applicants submit that the current objections to the claims should be withdrawn.

Rejection of Claims under 35 U.S.C. §112, Second Paragraph

Claim 3 has been rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner states that the time period being claimed, i.e., “substantially until slaughter,” is allegedly not defined in the claim or the specification, and that it is allegedly unclear exactly how long before slaughter the product being claimed is to be fed to the animal.

Applicants respectfully disagree and submit that “substantially until slaughter” would be understood by those of skill in the art to refer to the fact that the animals are not fed for a certain time prior to slaughter. Nevertheless, because the meaning of the claim is clear, and in the interest of expediting prosecution, Applicants have deleted the term “substantially” from claim 3, without conceding that the deletion of the term is necessary for the claim to be allowable.

Those skilled in the art are aware that animals are not fed for a certain time period prior to slaughter. Thus, the amended formulation “fed to the animal until slaughter” in the claim in its amended form is to be interpreted by those skilled in the art such that the animal is not necessarily fed the product just prior to slaughter.

In view of the foregoing, Applicants respectfully submit that this rejection has been overcome and respectfully request withdrawal of the rejection.

Rejection of Claims Under 35 U.S.C. §103

Claims 1-3, 6, 15, 21, 24, 38, 43, 44, and 52-57 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,865,852 (“Tamatani”), further in view of Proceedings of the New Zealand Society of Animal Production 63: 269-273 (“Hoskin”), further in view of Veterinary Parasitology 112 (2003) 147-155 (“Marley”), further in view of Journal of the Science of Food and Agriculture 81 :467-484 (“Bais”), further in view of Food Chemistry 76 (2002) 139-147 (“Poli”), further in view of Skatole and Boar Taint (1998), Chapter 3 (“Borg”). Applicants respectfully disagree. Applicants further note that the author of the document the Examiner refers to as “Borg” is Bent Borg Jensen; as such, the reference is referred to as “Jensen” throughout the instant response.

Standard for Obviousness

The Patent and Trademark Office has the burden under section 103 to establish a *prima facie* case of obviousness. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-87 (Fed. Cir. 1984). To establish a *prima facie* case of obviousness, three basic criteria must be met: first, the prior art reference (or references when combined) must teach or suggest all the claim limitations; second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify

the reference or to combine reference teachings; finally, there must be a reasonable expectation of success. *See* M.P.E.P. §2143.

An essential characteristic of any *prima facie* case of obviousness is that the references, when combined must teach or suggest all the claim limitations. The present rejection fails to make a *prima facie* case of obviousness because the references in combination fail to supply at least one element common to all of the claims in consideration.

The pending claims have been amended such that they are drawn to “dried chicory root product” (emphasis added) and methods for preparing and using the same. Claims 53-54 are cancelled without prejudice. Support for the claim amendments can be found in the specification, claims and drawings as originally filed.

Tamatani describes an additive for stock feeds containing decomposition products of chicory roots. The reference describes that the decomposition of chicory roots may be carried out by heating chopped chicory roots. Furthermore, the reference describes that the decomposition may be performed by first chopping and grinding the chicory roots into fine pieces, then preparing a slurry of the pieces and directly enzymatically decomposing the slurry; or alternatively by first chopping the chicory roots into fine pieces, then heating them, adding thereto water to form a slurry, and directly enzymatically decomposing the slurry. *See* column 2, line 65–column 3, line 6. The heating process is described throughout the reference to be performed at 120-250°C with a heating time of between 8 and 24 hours, with 180°C for 12 hours described as optimum. *See* column 4, lines 20-37.

The Examiner argues that a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. The instant claims are drawn to a dried chicory product and methods of making and using the same. It is well known in the art that the process of drying is performed below the boiling point of water (i.e. below 100°C), and that processes performed at temperatures above the boiling point of water do not result in a dried product. That is, in the art of plant processing, significant, art-recognized differences exist between drying

below 100°C and roasting or cooking, above 100°C, and that these differences, in fact, result in different products—dried versus cooked or roasted.

For example, chicory roots processed above the boiling point of water (i.e. above 100°C) have a higher content of sucrose and a lower content of fructan when compared to chicory roots processed below the boiling point of water. Differences between products processed above versus below the boiling point of water are also found in the oligofructan content as well as in the sesquiterpene content lactones and coumarin content. Thus, contrary to the position taken by the Examiner, a person of ordinary skill in the art would expect there to be actual and material differences in the properties (e.g., content and characteristics) of dried chicory root as claimed and chicory root processed at temperatures above the boiling point of water as taught in the cited art.

Moreover, it is not obvious to reduce the processing temperature described as “optimal” by Tamatani to arrive at the claimed dried chicory roots. This is because, when processing plant material, short processing times are typically preferred, as large amounts of plant material are usually treated and the processes must be carried out before the material begins to decompose e.g., due to rotting or decomposition as described in Bais: “During the storage of chicory roots, inulin is partially converted to inulide and fructose” (*See* page 471, 2nd column). To reduce the decomposition, chicory roots are therefore usually processed at high temperatures resulting in shorter processing times than required when processing at lower temperatures, such as when drying. In fact, Tamatani teaches away from using lower temperatures or lenient heating conditions: “When the temperature is lower and when the heating time is shorter than the above-mentioned levels, the decomposition of inulin is insufficient.” *See* column 4, lines 38-40. Tamatani thus teaches that the decomposition of inulin—a decomposition which occurs at high processing temperatures—is important to achieve.

In view of the foregoing, Applicants respectfully submit that the heating process of Tamatani at 120-250°C does not teach or suggest a dried product as claimed in claim 44 and used in the method of claim 1.

Hoskin describes young deer grazing chicory in the New Zealand autumn. This increases the resilience of the deer to internal parasitism, reducing anthelmintic use while increasing deer growth when compared to deer grazing perennial ryegrass-based pasture.

It is well known in the art that “grazing” refers to the use of fresh leaves as feed for animals, which is different from using dried root of chicory as claimed. Thus Hoskin is not relevant to the assessment of obviousness of the claims of the present patent application, alone or in combination with other cited references, as the person skilled in the art would recognize that the leaves and root contain different compounds and a dried product differs from a fresh product. Accordingly, Hoskin does not repair the deficiencies of the primary reference as discussed above.

Marley describes lambs grazing chicory, birdsfoot trefoil and ryegrass/white clover, and discloses that lambs grazing chicory did not have significantly lower FEC (faecal egg counts) than lambs grazing other forages but these lambs were found to have fewer total adult abomasal helminths than lambs grazing ryegrass/white clover (*See Abstract*).

As discussed above, the term “grazing” refers to the use of fresh leaves as feed, which is different from using dried root as claimed. Marley is therefore not relevant to the assessment of obviousness of the claims of the present application, and does not render the claimed invention obvious, either alone or in combination. Accordingly, Marley does not repair the deficiencies of the references discussed above.

Bais describes different aspects of chicory including cultivation, processing, utility and chemical compounds of the plant. Bais describes that “the phytochemicals or plant constituents are distributed throughout the whole chicory plant, but the main contents are present in the root.” See page 471, 2nd column. A chemical change of carbohydrates occurs during roasting, as described in Bais: “During roasting, the carbohydrates are partly converted into 5-hydroxymethyl-furfural;” “Thirty-two compounds were identified in the roasted root, 23 of which were new as chicory root constituents;” “Roasting dramatically increased the number of volatile compounds;” and “also identified the acids of chicory root and changes in the contents of

the main acids with different degrees of roast.” See page 473, section with the title ”Analysis of coffee blends”.

Bais does not describe at which temperatures compounds of the plant are changed. A person skilled in the art is not taught at which temperature the chicory root can be dried and is not taught of a method or product as in any of the claims of the present patent application. This document is therefore not relevant when assessing obviousness of the claims of the present patent application, either alone or in combination with the cited references. Accordingly, Bais does not repair the deficiencies of the references discussed above.

Poli describes the content of the sesquiterpene lactones 8-deoxylactucin and 11 β ,13-dihydroxylactucin as well as the sugars glucose, fructose and sucrose in the roots, the inner leaves and the outer leaves of three selections of chicory harvested at different time of the growing season. All plant parts showed some content of the sesquiterpene lactones and sugars at each harvest time.

However, Poli does not describe whether these sesquiterpene lactones and sugars are present in a dried chicory root product and does not describe any drying process. This document is therefore not relevant when assessing obviousness of the claims of the present patent application, either alone or in combination with the cited references. Accordingly, Poli does not repair the deficiencies of the references discussed above.

Jensen (referred to as “Borg” by the Examiner) describes the effect of various dietary fibre sources on the concentration of skatole in blood plasma of pigs. The conclusion states: “Statistical analysis of the results, taking the whole data set into consideration shows a highly significant effect of raw potato starch, fructo-oligosaccharides and lupins on skatole in plasma.” See page 67, part of the 1st entire paragraph. However, the source of the fructo-oligosaccharides (FOS) is not disclosed. FOS may be extracted from various fruits and vegetables such as from bananas, onions, chicory root, garlic, asparagus, barley, wheat, tomatoes, sugar beet, Jerusalem artichoke and leeks.

The dried chicory root product claimed in the present application comprises inulin, at least one low molecular sugar and at least one secondary metabolite. Thus, the claimed product

is different from the FOS of Jensen, as Jensen does not describe the use of dried chicory. Further, the product claimed in the instant application comprises at least one secondary metabolite, which is not described by Jensen. It is not obvious for a person skilled in the art to use dried chicory from a reading of Jensen, as the description in Jensen does not mention chicory or dried chicory when describing the experiments performed to determine the content of skatole in faeces, plasma and back fat. Accordingly, Jensen, alone or in combination, does not teach or suggest the claimed invention and does not repair the deficiencies of the references discussed above.

In view of the foregoing, Applicants respectfully submit that claims 1-3, 6, 15, 21, 24, 38, 43, 44, and 52-57 are patentable over the cited references in combination or alone. Withdrawal of the rejection of claims under 35 U.S.C. §103 is respectfully requested.

Conclusion

Applicants submit that the present Application is in condition for allowance and respectfully request the same. If any issues remain, the Examiner is cordially invited to contact Applicants' representative at the number provided below in order to resolve such issues promptly.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 04-0258.

Respectfully submitted,

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